RANCHO SANTA ANA BOTANIC GARDEN

LEAFLETS
of
POPULAR INFORMATION

No. 26 April, 1940

LUPINUS SUCCULENTUS
ANNUAL BLUE LUPINE

Prepared
by
RANCHO SANTA ANA BOTANIC GARDEN
of the
NATIVE PLANTS OF CALIFORNIA

Santa Ana Canyon
Orange County
California

No. 26 April 12, 1940

LUPINUS SUCCULENTUS.
ANNUAL BLUE LUPINE

Leguminosae Pea Family

Annual 1 to 2 ft. high, often equally broad, stems stout, succulent, hollow. Herbage glabrous to lightly puberulent, especially on lower surfaces of leaflets. Leaves with petioles up to 6 in. long, bearing 6 to 9 palmately arranged, obovate leaflets 1 to 2 in. long. Flowers in 6 to 12 whorls, borne on the main or lateral branches in terminal racemes 4 to 10 in. long. Each flower subtended by a small caducous bract; pedicels about $\frac{1}{4}$ in. long; calyx 2-lipped, the upper bifid, the lower usually entire, with two small bractlets between the upper and lower lips. Corolla essentially blue with portions purplish and white, but occasionally entirely white or pink, about 5/8 in. long; banner reflexed, the two halves obscuring the upper calyx lip, main portion blue, but center generally whitish; wings blue, fused at their tips, covering most of the pale arcuate keel which is deep purple tipped and lightly ciliate above and below near its base. Stamens 10, monodelphous, lower portion of filaments fused into a tube around the ovary; stamens of two sorts, 5 long with globose pollen sacs and 5 short with linear sacs (apparently sterile). Ovary 1-celled, the beak prolonged into a slender style capped with a tuft of hairs on its stigmatic portion. Seed pod (legume) hairy, $1\frac{1}{2}$ to 2 in. long, $\frac{1}{2}$ in. wide, containing 7 to 11 variously mottled brown or grayish hard coated seeds about 3/16 in. long. Cotyledons petioled in germination.

The genus Lupinus (word from the Latin for wolf, because the plants were erroneously thought to rob the soil of its fertility) contains over 100 species distributed on all continents except Australia, but is most abundant in North America. California has over 50 species, some of which are found in every part of the state. They range in size from tiny dwarfs an inch or so high to shrubs over 12 feet in height.

Lupinus succulentus was described in 1861 and credited to David Douglas, famous early botanist, by C. Koch. The original specimens apparently were cultivated in Europe from seeds collected by Douglas somewhere in California. Due to a confusion in the application of names this plant was long known as Lupinus affinis and is so listed in many of the older floras of California.

Lupinus succulentus (the species name being especially

appropriate because of the succulent nature of the herbage) is found in California from Mendocino County to the Mexican border, extending east to the Great Valley, but not to the deserts of Southern California. It thrives on open grassy slopes of clay and adobe soils, often covering hundreds of acres, and sometimes persisting in grain fields and other cultivated areas. Its occurence in any given area is sporadic, dominating the landscape one season and being practically absent the next. The flowers are generally at their best in March and April but if there are late rains the plants continue to bloom until much later. Seeds are mature by May and must be gathered quickly for the pods split when dry and scatter the seeds for some distance.

So abundant is this Lupine in the wild that little effort has been made to cultivate it. It was disappointing that the first few pounds of seed planted in the Garden produced only an occasional plant, although on adjacent hillsides the plants were abundant in native stands. Not until numerous experiments had been made was the problem of growing this species successfully solved. It was discovered that when the seeds were soaked in water for several hours that about 10% soon swelled and could be germinated in a couple of days. The remaining 90% could be soaked for at least six months without absorbing moisture, consequently they would not germinate. It was found that any method of perforating the hard seed coat so that water could be absorbed would result in prompt germination, but that abrasives such as sandpaper were too tedious. It was finally discovered that common commercial sulphuric acid poured over the seeds and allowed to remain for about 8 hours was satisfactory. Following this treatment the seeds were thoroughly washed in running water and planted immediately. Best results are obtained in cultivation from plantings made in the fall, the only precaution being to cover the seeds with about $\frac{1}{4}$ inch of soil.

Two wild plants of this Lupine were discovered in the Garden in 1932 on which the flowers were pink. The seeds were gathered and since then several generations have been grown resulting in a pure strain of pink flowered annual lupines of merit. Strangely enough the seeds of this pink flowered form are not so impervious to water and can be germinated without the sulphuric acid treatment.

RANCHO SANTA ANA BOTANIC GARDEN

Of The Native Plants of California.

Established 1927

In Memory of John W. Bixby

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Purpose: A scientific institution devoted to the growth and study of the native plants of California for their botanical, horticultural and popular features.

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MAIL ADDRESS

R. F. D., Anaheim, California

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Reissued without change of text, June, 1941